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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,893	06/19/2003	Eric Hillenbrand	NC 84509	7530

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EXAMINER	
SUNG, CHRISTINE	
ART UNIT	**PAPER NUMBER**
2878	

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/601,893	HILLENBRAND ET AL.	
	Examiner	Art Unit	
	Christine Sung	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *13-20* is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☒ Claim(s) *12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *06/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 6/19/2003 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-2 are rejected under 35 U.S.C. 102(e) as being anticipated by Wolff (US Patent 6,781,127 B1).

Regarding claim 1, Wolff discloses a two band imaging system (column 2, lines 41-57), the two-band system having an optical axis (see figure 1), the two band imaging system comprising:

Two focal plane array detectors (Figure 1,elements 30 and 40);

A beam splitter (element 20), the beamsplitter disposed within the system at an angle to the optical axis such that light entering the system is split and is simultaneously directed to each of the two focal plane array detectors (see figure 3); and

An enclosure (Figure 4a, element 100), the two focal plane array detectors and beamsplitter disposed within the enclosure.

Regarding claim 2, Wolff further discloses that the beamsplitter is a dichroic beamsplitter (see figure 1, element 20).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolff (US Patent 6,781,127 B1) in view of Zeng (US Patent 6,826,424 B1).

Regarding claim 3, Wolff discloses the limitations set forth in claim 2, but does not specify that the imaging system further comprises two filters of known bandpass, each filter placed in front of a corresponding focal plane array detector, the two filters disposed within the enclosure. However, Zeng discloses an imaging system with a plurality of focal plane array detectors (Figure 3, elements CCD1-CCD4) with a plurality of bandpass filters (elements BP1-BP4) that are in front of a corresponding focal plane array detector and within and enclosure (see figure 2). One of ordinary skill in the art would be motivated to use the bandpass filters as disclosed by Zeng with the invention as disclosed by Wolff in order to increase the accuracy of the detected data by filtering out erroneous or undesired radiation before detection.

Regarding claim 4, Wolff discloses an image processor (Figure 1, element 50) for providing real time absolute radiance imagery, the image processor simultaneously converting

the light entering the two infrared focal plane array detectors into an absolute radiance image or intensity images (see figures 2a and 2b).

Regarding claim 5, Wolff discloses detecting radiation in the NIR/SWIR/visible ranges (see abstract).

Regarding claim 6, Wolff further discloses that the FPAs are both infrared imagers (see abstract).

6. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolff (US Patent 6,781,127 B1) in view of Zeng (US Patent 6,826,424 B1) further in view of Barbour (US Patent 5,557,261A).

Regarding claim 7, Wolff discloses a two band imaging system, the two-band system (column 2, lines 41-57), having an optical axis (see figure 1), the two band imaging system comprising:

A mounting assembly (Figure 4a, element 100);

Two infrared focal plane array detectors (Figure 1,elements 30 and 40), the two infrared focal plane array detectors mounted on the mounting assembly (Figure 4a, element 100);

A dichroic beam splitter(element 20), the dichroic beam splitter disposed within the system at an angle to the optical axis such that light entering the system is split and is simultaneously directed to each of the two infrared focal plane array detectors (see figure 1).

An image processor (Figure 1, element 50) for providing real time absolute radiance imagery, the image processor simultaneously converting the light entering the two infrared focal plane array detectors into an absolute radiance image or intensity images (see figures 2a and 2b).

Wolff does not specify two filters of known band pass each filter placed in front of a corresponding infrared focal plane array detector; and a Dewar vessel, the two infrared focal plane array detectors, the two filters of known bandpass and the dichroic beam splitter disposed within the Dewar vessel. However, Zeng discloses an imaging system with a plurality of focal plane array detectors (Figure 3, elements CCD1-CCD4) with a plurality of bandpass filters (elements BP1-BP4) that are in front of a corresponding focal plane array detector and within and enclosure (see figure 2). One of ordinary skill in the art would be motivated to use the bandpass filters as disclosed by Zeng with the invention as disclosed by Wolff in order to increase the accuracy of the detected data by filtering out erroneous or undesired radiation before detection.

Wolff in view of Zeng does not specify a Dewar vessel that encases the FPA arrays , the filters and the beamsplitter. Barbour discloses a conventional Dewar vessel (Figure 6, element 44) that encases two FPA detectors (element 66 and 70) but does not specify encasing the filters and the beamsplitter. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the conventional Dewar vessel as disclosed by Barbour with the invention as disclosed by Wolff in view of Zeng in order to increase the accuracy of the detected radiation by decreasing the amount of erroneous radiation from reaching the detector elements. Further, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the beamsplitter and filters in the Dewar vessel in order to increase the accuracy of the detected radiation by reducing thermal gradients that are caused by optical elements being substantially different in temperature than the detector elements.

Regarding claim 8, Wolff further discloses that the two FPAs are perpendicular to each other (see figure 3).

Regarding claims 9-10, Wolff discloses detecting radiation in the NIR/SWIR/visible ranges (see abstract).

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wolff (US Patent 6,781,127 B1) in view of Zeng (US Patent 6,826,424 B1) further in view of Barbour (US Patent 5,557,261A) further in view of Kraemer (US Patent 5,581,271A).

Regarding claim 11, Wolff in view of Zeng further in view of Barbour does not specify an optic plate for correcting optical distortions of light. However, optic plates for correcting optical distortions are well known in the art, as demonstrated by Kraemer (see claim1). One of ordinary skill in the art would be motivated to use the optic plate as disclosed by Kraemer with the invention as disclosed by Wolff in view of Zeng further in view of Barbour in order to increase the accuracy of the detected radiation by decreasing optical distortions when directing the light to the detector.

Allowable Subject Matter

8. Claims 13-20 are allowed.

9. Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including *all* of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 12-20, none of the prior art of record specifies a two band imaging system, namely the positioning of the optic plate between the midwave infrared filter and the

dichroic beamsplitter. Conventional art teaches using optic plates between the filter and the detector so that any optical distortions are corrected prior to detection but after filtering. In the instant application, the radiation is split, then sent to the optic plate for distortion correction, and then is filtered.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

12. US Patent 5,555,324- this reference discloses an apparatus for generating fusion images from two detectors with a dichroic beamsplitter.

13. US Pre Grant Publication 2003/0053181 A1- this reference discloses a multi band optical system for dividing radiation.

14. US Patent 6,717,668 B2- this reference discloses simultaneous imaging using two FPAs.

15. US Patent 6,315,412- this reference discloses an imaging system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Sung whose telephone number is 571-272-2448. The examiner can normally be reached on Monday- Friday 7-3 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christine Sung
Examiner
Art Unit 2878

CS